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CHANGES IN INDUSTRIAL LAND USE
SAN FRANCISCO, 1919-1937

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TECHNICAL PLANNING MONOGRAPH # 3

CHANGES IN INDUSTRIAL LAND USE SAN FRANCISCO, 1919 - 1937

A report on the first half of the Industrial Land Use Absorption Study, showing acreage and rate of change in acreage used by heavy and light industry and in industrial acreage used for warehousing.

Prepared by:
William A. Proctor, Planning Research and Administration Division, under direction of George S. Duggar.

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A. PURPOSE OF STUDY*

The purpose of the Industrial Land Absorption Study is to determine increases in land utilization in San Francisco for light and heavy industry, during two periods: (a) 1919 through 1937; (b) 1937 through 1947. Data for the first period, 1919 through 1937 only is here summarized. A summary for the second period is planned to be made when the 1947 Land Use Maps are complete.

Definitions of light industrial, heavy industrial, and commercial activities have changed somewhat between 1919 and 1937, and also between 1937 and 1947. For instance, lumber yards were considered to be heavy industry in 1919, but in 1937 were classified as light industry. To the extent that properties could be identified and located in early property maps, corrections have been made in this study for changes in classifications in (a) commission houses, (b) lumber yards, and (c) breweries, all of which had differing classifications in 1919 and 1937. Numerous other discrepancies were noted between classifications made in 1919 and 1937, but the scattered location and small acreages of properties involved mean that errors tend to balance and are not significant.

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* The study is based on a study plan drawn up by William Spangle and map data prepared by R.C. Benson, January 1, 1948 were utilized.

B. FINDINGS. INCREASE OF INDUSTRIAL LAND USE, 1919 - 1937.

An increase of 65 per cent in the use of industrial land was found to have occurred between 1919 and 1937. This amounted to an increase of from 603.6 acres in 1919 to 996.8 acres in 1937, excluding industrial acreage where warehousing was the main activity. If warehousing acreage were included, the increase would have been around 70 per cent, or from 646.6 acres in 1919 to 1,097.7 acres in 1937.

Of these industrial acreages, land devoted to light industry in 1919 amounted to 193.2 acres, and increased to 547.8 acres in 1937, excluding warehousing, or a rise of 183 per cent. Heavy industry, however, remained fairly static, increasing only 9 per cent from 1919 to 1937. Detailed figures are as follows:

INCREASES IN INDUSTRIAL USES, 1919 through 1937

TYPE OF INDUSTRY	ESTIMATED ACREAGE 1919 (Acres)	INCREASE 1919 - 1937 (Acres)	ACREAGE 1937 (Acres)	PER CENT INCREASE (Per Cent)
I. TOTAL INDUSTRY EXCLUDING WAREHOUSING	603.6	393.2	996.8	65.1 %
Light Industry	193.2	353.6	547.8	183.0 %
Heavy Industry	410.5	38.6	449.0	9.4 %
II. TOTAL INDUSTRY INCLUDING WAREHOUSING	646.6	451.1	1,097.7	69.8 %
Light Industry	224.0	396.5	620.5	177.0 %
Heavy Industry	422.6	54.6	477.2	12.9
III. TOTAL WAREHOUSING	43.0	57.9	100.9	134.5 %
Shown as Light Industry	30.8	41.9	72.7	136.9 %
Shown as Heavy Industry	12.2	16.0	28.2	132.2 %
	(Per Ct)	(Per Ct)	(Per Ct)	
IV. PER CENT WAREHOUSING ACREAGE OF TOTAL INDUSTRIAL	6.6 %	12.8 %	9.4 %	
Shown as Light Industry	13.8 %	10.8 %	12.0 %	
Shown as Heavy Industry	2.9 %	29.3 %	5.9 %	

Of the 353.6 acres of industrial land use increase (excluding warehousing) which occurred between 1919 and 1937, almost half, or 188.7 acres, occurred in the Potrero-Bayview area of the city, in Census Tracts L-1 through L-5. This increase is due primarily to the development of new industrial properties in: (a) the Islais Creek marsh fill lowland area between Bayshore Boulevard, Third Street, Army Street, and Newcombe Avenue; (b) new fill land on the bay shore near Third Street, and new fill land bordering Islais Channel near Third Street and Arthur Avenue; (c) the industrial zone bounded by Paul Avenue, Third Street, Phelps Street, and Williams Street, whichwas being used for truck gardens in 1919. The increase in industrial land use in Tracts L-1 through L-5 amounted to close to 70 per cent.

The second largest increase, 161.0 acres, took place in the South-of-Market area, Census Tracts K-1 through K-6, bounded roughly by Van Ness Avenue South (formerly Howard Street), 16th Street, Market Street, and the bay. Here, the increase amounted to a little over 68 per cent. This region had little vacant land in 1919, and was predominantly light industrial in character, and the increases in industrial use largely represented replacement of substandard living quarters by industrial enterprises.

The North Embarcardero-North Beach area accounted for only 22.3 acres increase, the downtown "Triangle" district for only 11 acres increase, and the other areas studied had less than 10 acres apiece increase in industrial land use between 1919 and 1937.

Not all sections of the city were covered in this survey, but only those containing considerable industry. A considerable number of light industrial establishments are located in the Western Addition,

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but those are for the most part small-scale enterprises, located on small lots, employing only handfuls of employees. Many of them are non-conforming to zoning laws, having been in operation prior to the district's being zoned against industrial activities, and thus may not be expanded or improved to any great extent. Another scattered group of non-conforming industrial plants are located near the Bernal Cut freight spur of the Southern Pacific Railway. A few large plants are located in "island" industrial zones outside of the areas studied, including a brewery in the Western Addition, and a glass works near Ocean Avenue. Acreages involved, however, are not significant compared to the totals covered in the study, and little change has taken place in their areas between 1919 and 1937.

Districts studied in the survey were as follows:

(a) North Beach - Chinatown - North Embarcadero:
(Census Tracts A-1 - A-15)

East of Van Ness Avenue and north of a line drawn along California Street west to Kearny Street, south to Pine Street, west to Stockton Street, south to Sutter Street and west to Van Ness Avenue again.

(b) Downtown: ("Triangle" District -- Census Tracts A-16 - A-23)

East of Van Ness Avenue, north of Market Street, and south of the line described above.

(c) South-of-Market: (Census Tracts K-1 - K-6)

South of Market Street, east of Van Ness Avenue South, and north of 16th Street.

(d) Potrero-Bayview-Hunters Point: (Census Tracts L-1 - L-5)

South of 16th Street, and east of a line drawn along Van Ness Avenue South, Army Street, and Bayshore Boulevard.

(e) Mission District: (Census Tracts N-1 - N-10)

East of Dolores Street, south of Market Street, west of Van Ness Avenue South, and north of Army Street.

(f) Mission-Holly Park District (Census Tracts M-1 - M-5)

East of Mission Street, south of Army Street, and west of Bayshore Boulevard.

By districts, 1919 - 1937 industrial use increases were:

INCREASES IN INDUSTRIAL USES, 1919 through 1937
(EXCLUDING WAREHOUSING)

DISTRICT	TYPE OF INDUSTRY	ESTIMATED ACREAGE 1919	INCREASE 1919 - 1937	ACREAGE 1937	PER CENT INCREASE
		(Acres)	(Acres)	(Acres)	(Per Cent)
North Beach, Chinatown, North Embarcadero	Total	39.0	22.3	61.3	57.3 %
	Light	13.0	23.5	36.5	180.0 %
	Heavy	26.0	- 1.2	24.8	- 4.6 %
Downtown	Total	21.6	11.4	33.0	52.7 %
	Light	17.4	11.0	28.4	63.2 %
	Heavy	4.2	0.4	4.6	8.8 %
South-of-Market	Total	234.5	161.0	395.5	68.7 %
	Light	123.0	157.0	271.0	127.6 %
	Heavy	111.5	13.0	124.5	11.7 %
Potrero-Bayview-Hunter's Pt.	Total	271.2	188.7	459.9	69.6 %
	Light	24.8	154.1	178.9	621.3 %
	Heavy	246.4	34.6	281.0	14.0 %
Mission-Holley Pk.	Total	10.8	0.6	11.4	5.5 %
	Light	2.1	5.2	7.3	244.3 %
	Heavy	8.7	- 4.6	4.1	- 52.3 %
Mission Distr.	Total	26.7	9 2	35.7	34.7 %
	Light	12.9	12.8	25.7	99.1 %
	Heavy	13 8	- 3.6	10.0	-26.5 %
TOTALS	TOTAL	603.6	393.2	996.8	65.1 %
	LIGHT	193.2	353.6	547.8	183.0 %
	HEAVY	410.4	38.6	449.0	9.4 %

Warehousing has been excluded from the above figures since, although it is classed as industry in both the 1919 and 1937 land use maps, it differs from industrial uses of other types in: (a) ratio of employees to acreage; (b) nuisances; (c) use of materials. For many statistical purposes, therefore, figures for industrial uses excluding warehousing would be more significant in comparison with other

Industrial statistical data, such as volume of employment, value of product, and so on. Growth of industrial activity including warehousing, however, is shown in the following figures:

INCREASES IN INDUSTRIAL USES, 1919 through 1937
(INCLUDING WAREHOUSING)

DISTRICT	TYPE OF INDUSTRY	ESTIMATED ACREAGE 1919	INCREASE 1919 - 1937	ACREAGE 1937	PER CENT INCREASE
North Beach, Chinatown, North Embarcadero	Total	54.0	28.4	82.4	52.6 %
	Light	25.0	27.0	52.0	108.0 %
	Heavy	29.0	1.4	30.4	4.8 %
Downtown	Total	23.4	12.7	36.1	54.3 %
	Light	18.6	12.4	31.0	66.6 %
	Heavy	4.8	0.3	5.1	6.3 %
South of Market	Total	253.0	199.0	452.0	78.7 %
	Light	136.0	178.0	314.0	130.1 %
	Heavy	117.0	21.0	138.0	17.9 %
Potrero-Bayview-Hunter's Point	Total	278.4	200.6	479.0	72.1 %
	Light	28.9	160.6	189.5	554.6 %
	Heavy	249.5	40.0	289.5	16.0 %
Mission-Holly Park	Total	10.9	0.6	11.5	5.5 %
	Light	2.2	5.1	7.3	230.0 %
	Heavy	8.7	- 4.5	4.2	- 52.3 %
Mission District	Total	26.9	9.8	36.7	36.4 %
	Light	13.3	13.4	26.7	100.6 %
	Heavy	13.6	- 3.6	10.0	- 26.4 %
TOTALS	TOTAL	646.6	451.1	1,097.7	69.8 %
	LIGHT IND.	224.0	396.5	620.5	177.0 %
	HEAVY IND.	422.6	54.6	477.2	12.9 %

C. METHOD USED

The method called for a comparison of industrial land in use in 1919 and in 1937. The 1937 acreage totals were obtained from summaries and tabulations of the 1937 Land Use Survey, made by the U.S. Works Progress Administration, and sponsored by the City Planning Commission. These data included figures for individual blocks, census tracts, and larger districts in the city. They were published in the Report on Present and Future Uses of the Land by the San Francisco City Planning Commission in November, 1944. They were also used to make up the 1937 Land Use Maps which were also completed as a part of the WPA project.

Industrially-used land in 1919 was determined from the 1919 Land Use Maps, which were drawn up at that time by the City Engineer's Office from a land use survey undertaken as groundwork for the city's first zoning ordinance, passed later in 1921. Where map data was indistinct or incomplete, data was obtained directly from the survey material itself, (i.e., field notes accompanying photostatic copies of the 1918 edition of the Sanborn insurance underwriters property block diagrams).

Measurement of increases in industrially-used land between 1919 and 1937 on a block-by-block basis, was accomplished by means of an overlay map based on the 1919 and 1937 land use maps (both of which were drawn to the same scale). Distinctive colors were used to outline pieces of property used in light or heavy industry in 1919. The overlay was then superimposed on the corresponding section of the 1937 land use map, and increases or decreases in light or heavy industry (or changes in classification from light to heavy industry or vica versa) were indicated by cross-hatching in distinctive colors.

Plots thus outlined and cross-hatched on the overlay map were then measured in acres, parcel by parcel, and entries recorded on work sheets. Acreages of increases and decreases in light and heavy and total industrial use, and net changes, were totalled by blocks, census tracts, and larger districts in the city.

Figures for 1919 constitute estimated acreages obtained by subtracting the above-mentioned 1919-1937 changes from the acreage figures for 1937.

Warehousing data were also included on the overlay map, having been obtained from the 1937 editions of the Sanborn insurance underwriters block diagrams, and from other sources. Similarly, acreage for warehousing activities was obtained from the 1919 land use survey data (Sanborn photostats and field notes).

One major difficulty encountered was a difference in definition as to what constituted "light industry" in 1919 and the activities so classified in 1937. Likewise differing definitions of heavy industry and commercial activities were encountered in the two land use surveys. As mentioned above, it was found that breweries and lumber yards were classified as "heavy industry" in 1919, but as "light industry" in 1937. It was found, in checking known locations of breweries on the overlay map, that it indicated that a change from "heavy" to "light" industry had taken place, although in fact the same activity had been going on there all the time. The same was found to be true of lumber yards. Commission houses were "heavy commercial" in 1919 and "light industry" in 1937. Corrections were made for these three items, and data adjusted accordingly. The parcels involved were located on the

1918 land use survey block diagrams, their use identified in the accompanying field notes, and areas measured by reference to Assessor's Block Books.

Although there were numerous other changes in classification, it was felt that they involved small and scattered parcels, not significant to the findings of this study.

Other sources of possible error in the use of the overlay map data included map shrinkage (the 1919 land use maps are almost thirty years old and as much as five percent shrinkage was measured in some sheets, and compensated for), and data discrepancies in the 1937 land use survey data. In some cases, the 1937 Land Use Map was found not to agree with total figures found in the survey computations. It was here assumed that the computations were correct. Where 1937 land use data was incomplete, the City Planning Commission's 1937 Aerial Map Survey photographs (180-scale) were used to obtain desired data.

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